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| 09/477,422      | 01/04/2000  | JON C. SCHAEFFER     | 13DV-13434          | 9215             |

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EXAMINER

MEEKS, TIMOTHY HOWARD

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1762

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/477,422

Applicant(s)

SCHAEFFER, JON C.

Examiner

Timothy H Meeks

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-13, 16-18, 47, 73 and 112 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-13, 16-18, 47, 73 and 112 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Application Status***

The amendment filed on 1/26/04 in response to the Office Action mailed on 7/24/03 has been fully considered.

Claims 1-7, 14, 15, 19-46, 48-72, and 74-111 have been canceled. Claims 8-13, 16-18, 47, 73, and 112 remain pending.

### ***Claim Rejections - 35 USC § 112***

Claim 47 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification is void of a written description which conveys that applicants had possession of the following subject matter as claimed in claim 47:

- "under deposition conditions effective to provide an outer aluminide layer region comprising a substantially single phase solid solution intermediate phase and an inner diffusion zone region proximate the substrate";
- "said intermediate phase including an average nickel concentration of about 50 to about 60 % by weight so as to be non-stoichiometric relative to intermetallic compounds of aluminum and nickel, or aluminum and platinum, said outer aluminide layer region being substantially free of phase constituents other than said intermediate phase"; and

- "oxidizing the diffusion aluminide layer under temperature and oxygen partial pressure conditions effective to form an alpha alumina layer".

There is no mention whatsoever, explicit or implied, of the above-specified claimed subject matter. Applicants' arguments and supporting documentation have been fully reviewed but are not found convincing to show that the originally filed specification reasonably conveys that applicants had possession of the now claimed subject matter. Applicants argue that the method disclosed in the specification inherently results in formation of "an outer aluminide layer region comprising a substantially single phase solid solution intermediate phase and an inner diffusion zone region proximate the substrate". As support thereof, applicants point to various sections of the specification and USP 5,716,710 (actual patent intended is assumed to be 5,716,720) that specify that NiAl and platinum aluminide is formed. While it is agreed that the specification describes that the process produces a platinum aluminide region 34, 36 which is a "single-phase composition of aluminum, platinum, nickel and the diffused components of the substrate" that contains stable beta NiAl at aluminum concentrations above 18 weight percent, Applicants have not provided convincing evidence that this region is in the form of a solid solution. Furthermore, even if such evidence were provided, it is unclear how the terms "intermediate phase" relate to this region of the coating. What is this phase "intermediate" to?

Applicants argue that the specification conveys possession of the claimed amounts of nickel in the "intermediate phase" due to the specific nickel alloy substrates disclosed and because nickel preferentially migrates from the substrate at

higher rates than other substrate components. Kim is also referred to as showing an analysis of a "single phase (Ni, Pt) Al coating" formed by "the disclosed process" showing 50.3 weight percent Ni therein. First, it is not agreed that the Kim process was the same as that claimed. Kim merely recites electroplating a Pt layer on the substrate, aluminizing it in a CVD reactor, and grit blasting. The claimed process specifically requires a diffusion step intermediate the Pt deposition step and the aluminizing step. Therefore, this evidence does not appear to support Applicants' claim that the claimed process inherently results in the claimed nickel concentration range. Furthermore, a showing of one data point in the literature for one type of nickel substrate in the range of 50-60% does not reasonably convey that applicants had possession of the entire range of values at the time the application was filed.

Applicants argue that "factual, published evidence that the Ni weight in the claimed platinum-aluminide diffusion coating exceeds 50 weight %", hence the calculations presented on nonstoichiometry on page 5 of the 4/11/02 response show necessarily that Al is hypostoichiometric in a beta NiAl structure having over 50 weight % Ni. As set forth above, it is not clear that the coating analyzed by Kim was formed by the "disclosed process". Furthermore, the showing of "hypostoichiometry" for one coating does not support a claim of "nonstoichiometric" which includes both hyperstoichiometry and hypostoichiometry. To show that one particular coating on a particular substrate under certain conditions produces a coating that is hypostoichiometric with respect to Al does not support the now claimed subject matter of "so as to be non-stoichiometric relative to intermetallic compounds of

aluminum and nickel, or aluminum and platinum, said outer aluminide layer region being substantially free of phase constituents other than said intermediate phase".

Applicants argue that the disclosed process inherently provides support for the now claimed active step of "oxidizing the diffusion aluminide layer under temperature and oxygen partial pressure conditions effective to form an alpha alumina layer" because of the disclosed annealing step containing sufficient oxygen to perform this step. The only description pertaining to the annealing step is found at page 9, lines 6-12 and is as follows:

"The process of Figure 3 described to this point may optionally be followed by either or both of two additional processing steps. The substrate 32 and interdiffused region 34, 36 may be annealed to stress relieve the interdiffused region 34, 36, numeral 60. This annealing procedure, while widely used for some protective coatings, has not been found necessary with the present approach. If it is used, a preferred annealing treatment is a temperature of 1800-2000°F for a time of 1/4 to 2 hours."

The only purpose of the annealing step described is to relieve stress of the "interdiffused region". There is no step described of oxidizing the aluminide and there is no description of "oxygen" being providing at any partial pressure much less a partial pressure that will specifically be effective to form an alumina layer, much less the specifically claimed alpha phase alumina layer. The evidence provided falls far short from showing that the disclosed annealing step will inherently perform these functions.

Applicants argue that their disclosure of forming a ceramic topcoat would inherently result in the formation of the alpha alumina coating. Again, there is no disclosure that preheating is performed, much less performed so as to provide an

"oxygen" partial pressure and temperature that will be effective to form specifically an alpha alumina layer.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Conner et al. (ASME article).

The disclosed CVD PtAl coating process disclosed at pages 2 and 5 and the representation in figure 3 for the "CVD PLATINUM ALUMINIDE" anticipates the claimed process.

Applicants argue that Conner only discloses at page 2 that tested platinum aluminide coatings were produced using pack processes and were given post-coat heat treatment at 1925°F to "ductilize and to complete alloy heat treatment requirements". However, these are not the teachings found in the Conner ET AL. reference relied upon. This reference was cited by applicants in the IDS filed on 10/21/99 and has been cited by the examiner in various rejections throughout the instant prosecution. At page 2 of Conner ET AL., under the section titled "Platinum Aluminide Coating", it is disclosed

that Pt was electroplated on the substrate and diffused therein before CVD aluminiding, at page 5 that the CVD diffusion aluminide coating produced thereby is a single phase coating, and in Figure 3 for the "CV D PLATINUM ALUMINIDE" that the claimed concentration amounts of Al and Pt are contained in the coating. All limitations of claim 8 are disclosed in the Conner et al. article.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conner.

The amount of platinum at the surface of the single phase PtAl coating of Conner in the CVD example appears to be in the range of around 23% which is slight below the lower range endpoint of "about 30%" recited in claim 11. However, because Conner discloses at page 1 that "work by numerous investigators has shown considerable improvement in both oxidation and high temperature hot corrosion resistance of aluminide coatings on many substrates with the addition of platinum", it is clear that the amount of platinum added would affect the degree of these benefits and because Conner discloses that Pt amounts in the claimed range in the other disclosed aluminide coatings are operable (remaining graphs in figure 3), it would have been obvious to have derived amounts of Pt in the range of claim 11 through routine experimentation to optimize the corrosion resistance of the coating.



Applicants argue that Conner et al. do not disclose the limitations of claim 8. The examiner maintains that all limitations are disclosed as set forth previously.

Claims 9, 10, 73, and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner in view of Duderstadt et al. (5,238,752).

Conner does not disclose depositing a TBC on the aluminide layer. however, because Duderstadt discloses that deposition of a TBC layer on platinum aluminide coatings by EBPVD provides the advantages described at col. 5, lines 1-10 (abstract, col. 7), it would have been obvious to have deposited the TBC to achieve these advantages. The substrate is additionally heated to 1800 °F during the deposition of the TBC disclosed by Duderstadt which would constitute an annealing of the aluminide coating as required in claim 10. As to claim 71, Figure 3 clearly shows the Pt and Al concentrations in the outer surface decreasing with depth.

Applicants argue that Conner et al. do not disclose the limitations of claim 8. The examiner maintains that all limitations are disclosed as set forth previously.

Applicants argue that Conner and Duderstadt do not disclose Pt and Al concentrations that decrease with increasing depth as claimed in claim 112 or the concentration ranges of claim 73. However, this is clearly disclosed in Figure 3 for the "CVD PLATINUM ALUMINIDE" of Conner et al.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner in view of Wukusick et al. (5,100,484).

Conner discloses nickel-based alloy substrates but does not disclose contents of aluminum, rhenium, etc. thereof. However, because Wukusick discloses that substrates with the claimed components are known alloys for use as turbine parts, it would have been obvious to use such conventional substrates with the expectation of their being effective for turbine substrates.

Applicants argue that Conner et al. do not disclose the limitations of claim 8. The examiner maintains that all limitations are disclosed as set forth previously.

### ***Allowable Subject Matter***

Claims 16-18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or reasonably suggest using an aluminum source with the claimed activity along with the added claimed process limitations.

No prior art is applied to claim 47, however, this claim stands rejected under 35 USC 112, first paragraph.

### ***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 8-13 and 16-18 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 8-13 and 16-18 of copending Application No. 09/244,578. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 47, 73, and 112 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 47, 71, and 110 of copending Application No. 09/244,578. Although the conflicting claims are not identical, they are not patentably distinct from each other because they differ only in the overlapping ranges of Pt, Al, and Ni, concentrations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

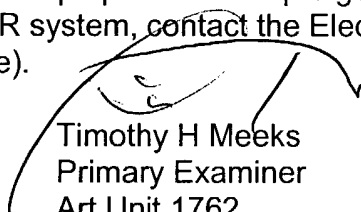
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy H Meeks whose telephone number is 571-272-1423. The examiner can normally be reached on Mon, Tues, Wed, 6-6:30, Fri. 6-10.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Timothy H Meeks  
Primary Examiner  
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